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Claims

[c1] An apparatus for separating leg quarters from the back portion of a poultry carcass back half comprising:
an elongated guide assembly having an entry end and an exit end mounted below a conveyor and extending along a path of conveyance and said guide assembly further having two proximately spaced guide rods for receiving and supporting a spine of a back portion of a back half thereon and straddling a circular blade and extending substantially in parallel along the path of conveyance toward the exit end beyond the blade; and
a wedge shaped plow having its peak pointing toward the entry end and each of a pair of diverging sides of the wedge shaped plow is attached to one of the rods such that the peak is centrally aligned between the two guide rods.

[c2] The apparatus for separating leg quarters as recited in claim 1, where the elongated guide assembly further comprises:
an upper elongated guide member having a v-shaped cross section forming a crest edge and oriented with the crest edge pointing downward for receiving the back

portion of the back half there under and a left and right whole leg straddled on either side.

[c3] The apparatus for separating whole leg as recited in claim 2, where the upper elongated guide member having attached thereto on opposing sides outwardly angled rod members for forcing apart the left and right whole legs causing tension at a left and right thigh joint between the left and right whole leg and the back portion.

[c4] The apparatus for separating leg quarters as recited in claim 2, where the upper elongated guide member has an upwardly angled bend on the entry end for receiving the back half.

[c5] The apparatus for separating whole leg as recited in claim 1, where the approximately spaced guide rods have downward and outward bends on the entry side.

[c6] The apparatus for separating whole leg as recited in claim 1, where the wedge shaped plow is a v-shaped plow.

[c7] An apparatus for separating whole leg from the back portion of a poultry carcass back half comprising:
a disc mounted below a conveyor rail conveying poultry shackles and aligned along a path of conveyance and said disc having teeth about its peripheral extending ra-

dially outward and said disc is operatively connected to a drive for effecting rotation of the disc to grasp and pull downward a poultry carcass; and
an elongated curved plow having a v-shaped cross section mounted and aligned along the path of conveyance and extending partially around the peripheral of the disc and having a radial gap between the teeth and the curved plow.

[c8] The apparatus for separating whole leg as recited in claim 7, where the curved plow has a circular curve and is co-centric with the disc.

[c9] The apparatus for separating whole leg as recited in claim 7, where the curved plow is adjustably mounted to a frame with a horizontally adjustable mounting member adapted to variably adjust the radial gap between the teeth and the curved plow.

[c10] The apparatus for separating whole leg as recited in claim 7, where the curved plow has at least one pointed leading edge.

[c11] An apparatus for separating whole leg from the back portion of a poultry carcass back half comprising:
a disc having teeth about its peripheral extending radially outward where said disc is operatively connected to

a drive for effecting rotation of the disc;
an elongated curved plow having a v-shaped cross section mounted adjacent the disc and extending partially around the disc and having a radial gap between the teeth and the curved plow; and
an elongated guide assembly having an entry end and an exit end mounted above the disc having left and right elongated guide members extending on either side of the disc in parallel over a portion of its length and further extending to turn downward toward the disc.

[c12] The apparatus for separating leg quarters as recited in claim 11, where the curved plow has a circular curve and is co-centric with the disc.

[c13] The apparatus for separating whole leg as recited in claim 11, where the curved plow is adjustably mounted to a frame with a horizontally adjustable mounting member adapted to variably adjust the radial gap between the teeth and the curved plow.

[c14] The apparatus for separating whole leg as recited in claim 11, where the curved plow has at least one pointed leading edge.

[c15] The apparatus for separating whole leg as recited in claim 11, where the left and right elongated guide mem-

bers turn outward as they extend toward the exit end.

[c16] An apparatus for separating whole leg from the back portion of a poultry carcass back half comprising:
a frame adapted to be fixedly mounted below a conveyor rail extending along a path of conveyance and operable to convey poultry carcass shackles;
an elongated guide assembly mounted to said frame having left and right elongated guide members extending in parallel along the path of conveyance and each extending further downstream curving outward forming a butterfly wing pattern and said guide assembly is positioned such that a whole leg of an oncoming back half being conveyed in a shackle straddles the left and right guide member;
a disc having teeth radially extending outward around the peripheral of the disc and said disc and teeth oriented substantially vertical and substantially aligned with the path of conveyance and said disc rotatably mounted to said frame at a height such that the teeth engages a back portion of the back half as the disc rotates pulling the back portion along its circular path of rotation; and
an elongated curved plow having a v-shaped cross section forming a crest edge mounted to said frame and said curved plow positioned to be co-centrically oriented with the disc and proximately spaced from the disc pe-

ripheral forming a radial gap such that the crest edge of the plow plows into the back portion as it is pulled by the disc.

[c17] The apparatus for separating whole leg as recited in claim 16, where the curved plow is adjustably mounted to the frame with a horizontally adjustable mounting member adapted to variably adjust the radial gap between the teeth and the curved plow.

[c18] The apparatus for separating whole leg as recited in claim 16, where the curved plow has at least one pointed leading edge.

[c19] The apparatus for separating whole leg as recited in claim 16, where the elongated guide assembly is adjustably mounted to the frame such that the elongated guide members can be adjustably lowered and raised with respect to the disc.

[c20] The apparatus for separating whole leg as recited in claim 16, where the left and right elongated guide members turn downward toward the disc as they extend downstream for pulling the back portion downward to engage the disc.

[c21] An apparatus for separating whole leg from the back portion of a poultry carcass back half comprising:

a circular blade rotatably mounted below a conveyor rail conveying shackles along a path of conveyance and said circular blade is operatively connected to a drive for effecting rotation of the circular blade;
an elongated guide assembly having an entry end and an exit end mounted below the conveyor and extending along the path of conveyance and said guide assembly further having two proximately spaced guide rods extending in parallel along the path of conveyance downstream beyond the circular blade and straddling said circular blade; and
a wedge shaped plow having its peak pointing upstream and each of the slanted sides of the wedge shape plow is attached to one of the rods such that the peak is aligned with an edge of the circular blade.

[c22] The apparatus for separating whole leg as recited in claim 21, where the elongated guide assembly further comprises:
an upper elongated guide member having a v-shaped cross section oriented with the crest edge pointing downward for receiving a back portion of a back half there under and a left and right whole leg straddled on either side.

[c23] The apparatus for separating whole leg as recited in claim 22, where the upper elongated guide member hav-

ing attached thereto on opposing sides outwardly angled rod members for forcing apart the left and right whole leg causing tension at the left and right thigh joint between the left and right whole leg and the back portion.

[c24] The apparatus for separating whole leg as recited in claim 22, where the upper elongated guide member has an upwardly angled bend on the entry end for receiving the back half.

[c25] The apparatus for separating whole leg as recited in claim 21, where the proximately spaced guide rods have downward and outward bends toward the entry end.

[c26] The apparatus for separating whole leg as recited in claim 21, where the wedge shaped plow is a v-shaped plow.

[c27] An apparatus for separating whole leg from the back portion of a poultry carcass back half comprising:
a frame adapted to be fixedly mounted below a conveyor rail, extending along a path of conveyance and operable to convey poultry carcass shackles;
a circular blade rotatably mounted below the conveyor rail conveying shackles along a path of conveyance and said circular blade is operatively connected to a drive for effecting rotation of the circular blade;

an first elongated guide assembly mounted to said frame below the conveyor and extending along the path of conveyance and said guide assembly further having two proximately spaced guide rods extending in parallel along the path of conveyance toward an exit end beyond the circular blade and straddling said circular blade;
a wedge shaped plow having its peak pointing toward an entry end and each of the diverging sides of the wedge shape plow is attached to one of the rods such that the peak is aligned with the edge of the circular blade;
a second elongated guide assembly mounted to said frame having left and right elongated guide members extending in parallel along the path of conveyance and further downstream curving outward forming a butterfly wing pattern and said second guide assembly is positioned such that a whole leg of an oncoming back half being conveyed in a shackle straddles the left and right guide member;
a disc having teeth radially extending outward around the peripheral of the disc and said disc and teeth oriented substantially vertical and substantially aligned with the path of conveyance and said disc rotatably mounted to said frame at a height such that the teeth engages a back portion of the back half as the disc rotates pulling the back portion along its circular path of rotation; and
an elongated curved plow having a v-shaped cross sec-

tion forming a crest edge mounted to said frame and positioned to be co-centrically oriented with the disc and proximately spaced from the disc peripheral such that the crest edge of the plow plows into the back as it is pulled by the disc.

[c28] A method for separating whole leg from the back portion of a poultry carcass back half comprising the steps of:
cutting a back portion of a poultry carcass back half at least along the spine with a rotatable circular blade having a cutting edge;
plowing along a cut created by the circular blade, along the spine of the back portion with a horizontally oriented wedge shaped plow where said plow, having a vertically oriented peak aligned with the cutting edge.

[c29] The method of separating whole leg as recited in claim 28, further comprising the steps of:
pulling a whole leg of the back half outward with outwardly angled guide members about which the whole leg straddle causing outward tension.

[c30] The method of separating whole leg as recited in claim 28, further comprising the steps of:
receiving and aligning the back portion under an upper elongated guide member having a v-shaped cross section oriented with a crest edge pointing downward for

receiving the back portion of the back half there under and with the whole leg straddled on either side.

[c31] The method of separating whole leg as recited in claim 28, further comprising the steps of:
receiving and aligning the spine with two proximately spaced guide rods for receiving and supporting and aligning the spine of the back portion and the rods straddle the circular blade and extend in parallel along the path of conveyance toward the exit end beyond the blade.

[c32] A method for separating whole leg from the back portion of a poultry carcass back half comprising the steps of:
cutting a back portion including whole legs at least along a spine forming a cut along the spine with at least one blade;
pulling the whole legs of the back portion outward by straddling the whole legs about a progressively outwardly expanding upper elongated guide member by conveying the leg quarters of the whole leg along the guide member; and
plowing along the cut along the spine of the back portion with a crest edge of a curved plow having a v-shaped cross section.

[c33] The method of separating whole leg as recited in claim

32, further comprising the steps of:
grasping the back portion being conveyed with a rotatable vertically oriented disc having teeth around its peripheral and pulling the back portion about the peripheral engaging the curved plow having a v-shaped cross section.

[c34] The method of separating whole leg as recited in claim 33, further comprising the steps of:
pulling the back portion downward with an upper elongated guide member toward the disc for grasping by conveying the back portion along the guide member having a downward bend.

[c35] The method of separating whole leg as recited in claim 34, further comprising the steps of:
rotating the whole leg upward about a thigh joint connecting the whole leg to the back portion by continuing to hold the whole leg in a conveyor shackle as the whole leg is being conveyed.

[c36] A method for separating whole leg from the back portion of a poultry carcass back half comprising the steps of:
conveying a poultry shackle along a conveyance line where said poultry shackle has a back half hanging therefrom by a pair of hock joints such that two whole legs of the back half are spread apart and straddle an

elongated guide member and a back portion of said back half is positioned under the guide member; and
grasping the back portion being conveyed with a rotatable vertically oriented disc having teeth around its peripheral and pulling the back portion about the peripheral engaging a curved plow having a v-shaped cross section where the curved plow is concentrically oriented and proximately spaced with respect to the disk and the peaked edge of the plow is aligned with the disc.

[c37] The method of separating whole leg as recited in claim 36, further comprising the steps of:
pulling the back portion downward with an upper elongated guide member toward the disc for grasping by the disc by conveying the back portion along the guide member having a downward bend.

[c38] The method of separating whole leg as recited in claim 37, further comprising the steps of:
rotating the whole leg upward about a thigh joint connecting the whole leg to the back portion by continuing to hold the hock joints in a conveyor shackle.

[c39] A method for separating leg quarters from the back portion of a poultry carcass back half comprising the steps of:
conveying a poultry shackle along a conveyance line

where said poultry shackle has a back half hanging therein by a pair of hock joints such that two whole legs of the back half are spread apart and straddle an upper elongated guide member and a back portion of said back half positioned under the guide member;
supporting the back portion with a lower guide assembly having left and right guide rods proximately spaced on either side of a circular blade;
cutting the back portion with the circular blade along a spine of the back portion by conveying over the blade to form a cut along the spine; and
plowing along the cut created by the circular blade along the spine of the back portion with a horizontally oriented wedge shaped plow, said plow having a vertically oriented peak aligned with the circular blade.

[c40] The method of separating whole leg as recited in claim 39, further comprising the steps of:
receiving and aligning the back portion under the upper elongated guide member having a v-shaped cross section oriented with the crest edge pointing downward for receiving underneath the back portion of the back half as the back portion is being conveyed.

[c41] The method of separating whole leg as recited in claim 39, further comprising the steps of:
receiving and aligning the spine of the back portion be-

tween the left and right guide rods.

[c42] A method for separating whole leg from the back portion of a poultry carcass back half comprising the steps of:
cutting a back portion of a back half at least along the spine with at least one blade;
plowing along a cut created by at least one blade along a spine of the back portion with a horizontally oriented wedge shaped plow where said plow, having a vertically oriented peak aligned with a cutting edge of the at least one blade;
pulling a pair of whole legs of the back portion outward by straddling the whole legs about a progressively outward expanding guide member and conveying the whole legs along the guide member;
grasping the back portion being conveyed with a rotatable vertically oriented disc having teeth around its peripheral and pulling the back portion about the peripheral such that the cut along the spine engages and is plowed by a curved plow having a peaked edge and having a v-shaped cross section where the curved plow is concentrically oriented and proximately spaced with respect to the disc and the peaked edged of the plow is substantially aligned with the edge of the disc.